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"Salvation of India lies in Cottages".

—MAHATMA GANDHI

Naya Mode

THE concept of 'Naya Mode' In Khadi and other constructive activities initiated by Gandhiji in 1944 and revived under the guidance of Vinobaji in Chalisgaon Conference of Khadi and other constructive workers in 1948, was further discussed, deliberated and clarified at Kora Gramodyog Kendra, Borivli (Bombay) when Khadi Gramodyog Samiti of Akhil Bharat Sarva Seva Sangh and representatives of major Khadi institutions met in conference in May last. The issue had been thrashed out also in other interim meetings and conferences held at Sevagram, Poosa Road and Kashi to evolve a workable programme and suitable organization to implement it. While reiterating the decisions taken in these meetings and conferences, Kora Kendra Confernce, after three days' deliberations, adopted the three-pronged programme adumbrated by Gandhiji, viz.,

(1) All sided integrated programme of village development including Agriculture, Animal husbandry, Health, Hygiene, Education, Social reforms, etc. with Khadi and Village Industries.

(2) Emphasis on production of Khadi for self-consumption on the basis of regional self-sufficiency, i. e., *Gram* or *Kshetra Swavalamban*.

(3) Decentralisation of institutions Into primary village units and Taluka and District organizations.

Need Of 'Naya Mode'

As far back as in 1944, Gandhiji had realised the need of 'Naya Mode' (New orientation) in Khadi and constructive work and initiated what is known as *Nav Sanskaran* of Khadi. He had realised, as must be realised by all constructive workers, that village life could not be compartmentalised. It was an integrated whole. Any programme, therefore, aiming at reconstruction of village life, must embrace all-sided development. A secluded programme of Khadi and village industries had its limitations and could not be pushed beyond certain limits unless other village problems related with it were also tackled. Agriculture formed the basis of village life and work. A programme divorced from it lacked solid basis.

Pointed attention has been focussed, of late, to the problems of land by the Bhoodan and Gramdan movement conducted by Vinobaji. No constructive worker can bypass them. The decision, therefore, to have an integrated programme of development is most welcome.

It is reported that out of the Khadi

prodcution of Rs. 13.53 crores, Khadi worth Rs. 8.61 crores only was sold in 1959-60, leaving a stock of unsold Khadi worth Rs. 4.92 crores. This is an alarming situation and does not foretell a good future for progress. The Khadi workers must, therefore, devise ways and means to face it.

Khadi is gradually degenerating into a simple commodity of commerce and is falling from its high pedestal of idealism. It is an irony that Khadi which was held by Gandhiji as a symbol of Ahimsa and an instrument for the creation of a non-violent order of society, and was viewed by the people as a livery of patriots dedicated to the ideals of purity and self-sacrifice, is now being condemned and censored by various sections, as a cover or camouflage to perpetrate any sort of fraud in the society. A stage has reached when Khadi work must be re-orientated.

To-day Khadi is not a thing of common man. It is mainly used either by old national and public workers or by those who want to pose themselves as patriots and leaders in society. There is also a class of people who casually hoppen to purchase Khadi for considerations of designs, fashions or otherwise. But it is not a thing of common man's use. Khadi can have a future only when it becomes a common man's article of use. But at the same time to save it from turning into a common commodity of commerce and trade, it must be imbued with the high ideals of *Sarvodaya* preached by Gandhiji. he forces released by the Bhoodan and Gramdan movement have opened a vista of possibilities to carry the movement of Khadi and Village Industries in rural areas as a progromme of *Gram Swavalamban*. There alone lies the future and survival of Khadi.

The Programme and Pattern of Organisation

The three-pronged programme outlined above will probably have universal support. The programme of Khadi and village industries when co-ordinated with other programmes of development affecting other facets of village life on the basis of bringing about regional or village self-sufficiency, will have greater appeal to the people and will be better rooted in the soil.

It is said that Khadi is not mere cloth; it is an idea. It stands for universal brotherhood, equality and social justice. It represents service of *Daridranarayan*. It is the symbol of a non-violent, non-exploitative co-operative social order. It is a means for achieving Gram Swarajya. The programme of such Khadi could not be isolated. It must be an integral part of the whole programme covering entire life. The commercial Khadi, produced by one in the village and consumed by the other in the city, cannot fulfil the aforesaid objectives. It must be owned and used by the people who produce. Only surplus should find place in outside market.

The organisational pattern proposed to be set up for implementation of the programme is of three structures –

(1) **Gram Ekai** (Village Unit) on the village level,

(2) **Kshetra Samiti** on the block level, and

(3) **Zila Ekai** on the district level.

The primary unit will be the *Gram Ekai*

of a village or group of villages with 5,000 population, and the agency to carry out the development programme will be Gram Panchayat or Gram Samiti or a Multipurpose Co-operative Society depending on local needs and conditions. The Kshetra Samiti will serve the area of 60,000 to 1,00,000 population and Zila Ekai will be the biggest unit covering a district. It is proposed to have no organization bigger than that for a district.

The declaration of policy lays down that "In a Gram Ekai the entire village will live as one family and run and manage its own affairs. The village should achieve selfsufficiency in its basic needs such as food, cloth, shelter, education and health and become self-reliant. There should be co-sharing of the joys and sorrows of life by the village community which should consider it its responsibility to feed and provide work to every one in the village."

The success of the programme, more or less, depends on the working of *Gram Ekais*. 1000 such *Gram Ekais* are programmed to be constituted in the first year i. e. 1960-61 and 2,000 in 3 years. It is envisaged that Gram Panchayat or Gram Samiti or Village Co-operative would shoulder the responsibility of carrying out all development work. How far these bodies prove their capacity to discharge this responsibility has to be seen; for, present conditions as obtain in villages, hardly warrant much hope.

The people seem to have lost all initiative, enthusiasm and *the will to work*. They lead a life of resignation depending for everything on fate. Lethargy and idleness have their full play. Factions, feuds and rivalry are commonly witnessed. It is a herculean task to free the villages of these evils, and unless it is done no development work can succeed. This is one of the main difficulties which will confront the constructive worker. His success will depend upon the way he tackles it and enthuses the people to work for common weal.

Towards Gram Swaraj

By: SURESH RAM

"My idea of the Village Swaraj is that it is a complete republic, independent of its neighbours for its own vital wants, and yet interdependent for many others in which dependence is a necessity;...Non-violence with its technique of satyagraha and non-co-operation will be the sanction of the village community."

—**Gandhiji**

"Gramdan is the expression of the spirit of the age. It asks people not only to break the narrow domestic walls and consider the whole as one family but goes further and asks all the villagers to meet together to consider their common problems and solve them with one mind.;..No one will have any exclusive interest. Whatever one does for himself will also be for all.

—**Vinobaji**

INDIA lives in villages. She rises and falls by their strength and weakness. Her prosperity would be measured not by the luxurious indulgence displayed in New

Delhi or a few other cities but by the happiness of the common people in the villages.

That our Swaraj has not yet reached our villages is a sad reality. Unless our teeming millions come into their own and attain their socio-economic liberation, India will hardly be able to play its due role effectively and even the hard-won freedom would be in jeopardy.

Happily, all sections of opinion in the country acknowledge this necessity and the Government too is aware of its great responsibility to realise it. Accordingly, it launched the community development programme which has covered a very large part of our countryside during the last eight years. It has made earnest attempts and devoted considerable attention and money towards its fulfilment.

These labours, however, are not bearing the desired fruit. This is due to several reasons, political, social, economic, administrative and also historical. Concentration of power with the Central and State authorities allows little chance for the development of any initiative or planning at the district or lower levels, and almost nil at that of the village. Geared up as the whole system is with the idea of a Welfare State, it is not surpising either. In consequence, village planning tends to remain a distant dream and hunger and poverty and dissatisfaction stalk the land.

Most of the confusion in the situation is due to the fact that we are not very sure about what we have to do. Nor is our grasp of the situation thorough. The Indian peasant has an experience of several thousand years at his back. He has a very strong common sense. His observation is very acute, discrimination very keen and judgment very mature. He has a knack of judging things, as if by instinct. No scheme of action can be thrust upon him against his will. None who has not identified himself with him should think of chalking out any course of action for him. The task of planning therefore, becomes far more difficult here than anywhere else.

Fortunately, Mahatma Gandhi, whose identification with Indian peasantry was wholesome and complete and who declared himself to be a farmer and weaver has left for us a fairly vivid picture of the new village. But freedom was to be obtained before a village could be built anew. It was not quite obvious how that picture would actually materialise in free India. Happily a solution to this riddle was discovered by Acharaya Vinoba and he has shown the definite steps to negotiate the summit.

Gandhiji's picture is both scientific and human. Science teaches us that what is true for the cosmos is also true for the atom. Likewise, what is true for the whole country should be true for the village too. In other words, the village should enjoy the same freedom as the country does. This is called *Gram Swarajya*. Every village should be a complete republic deciding its destiny of its own accord. It should have full liberty to choose its course. Also it should be free of any pressure with regard to its basic needs of fooding and clothing and housing. It must be self-sufficient and self-reliant in them.

The word 'self-sufficiency' jars on many a ear. It is taken to be a plunge into the

backward move. Nothing can be farther from truth. Gandhiji was quite clear about it :

> "Mind you, my idea of self-sufficiency is not a narrow one. There is no scope for selfishness and arrogance in any self-sufficiency. I am not preaching isolation. We have to be humble as the dust for the fulfilment of our cause. We have to mix with people even as sugar mixes itself with milk. Though villagers will be self-sufficient as far as it is possible, they will devote their time also to their intellectual development for creation of consciousness for the contemplated non-voiolent society of the future."

Thus every village would itself be looking after its affairs and our democracy would take the shape of a federation of more or less self-reliant and self-governing village communities. They would be converting all their raw material into finished product themselves and donating part of the surplus for the larger interest of the country and exchanging the rest with what they require and are not able to produce in the village.

The local republic will see to it that nobody in the village goes hungry or remains unemployed. The *panchayats* would have full powers of executive and judiciary. This does not exclude dependence on and willing help from neighbours or from the world. But all such help as comes to the village would not be dictated by any authority and would be uniformly and equitably distributed to one and all in the village.

Nor is any scientific measure tabooed. It is very welcome. But the only condition is that its fruits should be available to all and it should not become a tool in the hands of a few, as we do find today, to exploit the many and aggravate disparities. The entire pattern of the village would thus undergo a transformation. As Gandhiji said :

> "In this structure composed of innumerable villages, there will be ever-widening, never-ascending circles. Life will not be a pyramid, with the apex sustained by the bottom. But it will be an oceanic circle whose centre will be the individual always ready to perish for the village, the latter ready to perish for the circle of villages, till at last the whole becomes one life composed of individuals, never aggressive in their arrogance but ever humbler, sharing the majesty of the oceanic circle of which they are integral units."

Gandhiji gave a hint how all this would come to shape. He advocated "voluntary abdication of riches and the power that riches give and sharing them for the common good." Further, "the means of production of the elementary necessaries of life should remain in the control of the masses. These should be freely available to all as God's air and water are or ought to be; they should not be made a vehicle of traffic for the exploitation of others. Their monopolization by any country, nation or group of persons would be unjust."

On these very principles, Vinobaji enunciated his Bhoodan Yajna mission. Beginning as a movement for donation of land for the landless, it has developed into Gramdan—a voluntary renunciation of the private ownership of land, its equitable distribution on unanimous basis among all the households in the village, and its utilisation, whether on individual or co-operative, or combined lines, to be decided by the people of the village themselves, with the problem of land in the village thus

resolved, the way is paved for establishing Gram-Swaraj. The people will settle their affairs themselves and have a pattern of their own choice. In Vinoba's words :-

"The administration of the Gramdan village would be carried on by the Gram Sabha, having as its members, all the people in the village aged 18 and above. The *Sabha* would elect some more committees to perform the several functions in the village. The decisions of these committees would be recommendatory in character and final decisions would have to be taken by the Gram-Sabha.

"In the present day set-up, there was ownership of land and the members of the panchayat would be elected by majority, and there would be motives behind electing them. But in a Gramdan village, there could be no such motives, as there would be no ownership of land, and the elections would always be unanimous. Even in regard to this prescribed administrative set-up, if the people of any Gramdan village desire a change, they could effect it by taking a unanimous decision on such a change."

For the establishment of this Gram Swaraj, Vinobaji has been incessantly on his feet from 18th April 1951. Six years later when he reached Kanya-Kumai, he took a new pledge on the famous Vivekananda rock. It was as follows :-

"I solemnly pledge this day (15th April 1957) at the feet of Kanya-Kumari, on the shore of the Indian occean and in the presence of Surya Narayan, that as long as Gram-Swaraj is not established in India, I shall continue my *yatra* and ceaselessly carry on the efforts in that direction."

The key to Gram-Swaraj lies in sharing and decentralisation of wealth and authority and power. In fact, decentralisation is the *sine qua non* of true freedom. Centralisation necessarlly implies concentration of wealth with a few and consequent exploitation of the many. And where there is economic exploitation, political freedom is merely an illusion. Gramdan has cleared the path for increasing and progressive decentralisation, without which neither can our villages stand on their feet nor can the Indian people enjoy prosperity and peace and fulfil their mission in life.

Of all the States in our country, Rajasthan and Andhra have dared to take a plunge in this direction. Rajasthan was the first to come in the field and has entrusted its Block Development Committees to frame and work their own budgets. It is an experiment to be watched with sympathy and interest.

Let us hope that the people of Rajasthan, known for their valour and devotion, would take the brave step of Gramdan and march forward together to establish Gram Swaraj and lead the country in setting up a casteless, classless and state-less society.

Cooperative Farming In India

By: Dr. S. L. Gupta

THE average size of holding in the country is extremely small and fragmented. Hence it is very difficult for an individual peasant to eke out his living from agriculture unless and until he starts his farming on co-operative basis. Moreover, his resources in man and bullock power cannot be fully and properly utilised.

In Order to be independent in his

work and ensure timely service to his land in the form of agricultural operations, it is essential for him to keep one pair of bullocks and the neccessary agricultural implements. If he does not keep them his efficiency and productivity of land will suffer and ultimately he will be a loser. This is an unavoidadle expenditure or his cultivation becomes uneconomic thereby making him a bankrupt and always indebted to the Mahajans.

It has got another bad effect that a number of useless and unnecessary cattle are maintained, with the result that, their condition deteriorates and they are not able to work well. Besides, they do not allow the peasants to keep milch cattle. As the number of draft cattle does not permit him either in time or in the matter of finance to look after his milch cattle he does not get sufficient milk and ghee for his dietary. If the small holdings are cultivated on co-operative lines he shall not require a separate set of instruments and bullocks.

On small and scattered holdings there is no scope for balanced production. Neither the peasant can layout a definite plan of production ncr can he follow the scientific methods of production, with the result that the yield per acre is low, his means meagre, his standard of living pitiably low and the various schemes launched out by the government for the uplift of the peasants prove futile. If we want prosperity and a better standard of living for our peasants, we should rehabilitate agriculture on co-operative lines and bring it to the same level as those of other agriculturally advanced countries. Unless we attain that level we cannot raise the standard of living to a moderate footing of the teeming millions of the country and the food problem will remain with us permanently.

Forms of co-operative farming :

The following four types of co-operative farming can be adopted :

1) Co-operative better farming soceities according to which individual ownership of land and individual operation on it are recognised. The members of the soceity join together to get the benefits through the society e.g. the purchase of seed and fertilisers, hiring of the costly implements owned by the society, etc.

2) Co-operative joint farming societies, according to which individual ownership of land is recognised and respected but there is joint operation of land.

3) Co-operative tenant farming society according to which collective ownership of land but individual operation is recognised.

4) Co-operetive collective farming societies, according to which collective ownership and collective operation are recognised.

In respect of middle farmers, (i. e. those holding land between one to three family holdings) the small farmers (i. e. holding land within family holding) and landless agricultural labourers, co-operative farming societies should be organised. The pattern of co-operative society, to begin with, should be the service co-operative society or co-operative better farming society. But other forms of co-operative societies should not be completely ruled out.

Details of the scheme with necessary comments.

There can be many details of the scheme varying from locality to locality according to the different conditions obtaining in them. The scheme detailed below can be

said to be an ideal one and can be changed according to the conditions of the locality. The scheme shall be discussed below under the following heads:–

(1) The unit

A village should be the unit of a co-operative farming society. All the residents or nearly 80 or 90 percent of the villagers should be the members of such a society. The holdings of all the members should be pooled and a compact area formed. The members should *not lose their individual identity* in pooling the land.

If there are some peasants, who do not want to part with their land coming into the compact area, they should be requested to part with that area and the area of an equal size should be allotted to them at some other place. Thus by mutual exchange the compactness of the farm can be attained. If persuation fails in this direction legislation can help society in attaining this goal.

(2) The pooled area of the member.

There can be one pertinent question whether the land pooled of an individual member should be the entire holdings of each member or he should also be allowed to retain a small part as his own individual holding separate from his pooled land. There can be difference in the opinions of different persons as to the pooling of the entire holding or the retention of a part of the holding separte from the compact area and there can also be the difference in the area of the land retained with each individual. In my opinion the *entire holding of the member should be pooled.* If a part of the holding is retained by the ember, he shall not put forth all his energy on the cooperated area and will show greater interst in his separate holding. Thus there shall be delay in conducting the operations on the field as all the operations in farming are conducted at the same time. It is natural for a man first to serve his own interest and later on the interest of his neighbours. He will show greatest interest in his separate holding and less in the compact cooperated area, Thus there shall be delay in conducting the operations on it.

(3) Valuation of the Land:

The next problem which the members will have to face is the *valuation of the land pooled* so as to arrive at the apportionment of the land shares of the members. The value of the land can be assessed according to the area of the land irrespective of its productivity. The system of land valuation will differ from place to place, but in my opinion the evaluation of land on the basis of productivity shall be the most upto-date method.

(4) Pooling of implements, bullocks, etc.

Pooling of implements and buollcks will also be required. In order to pool them their proper valuation is to be made. The value shall be fixed according to the utility of these implements to the farm and the remuneration is to be paid according to their utility value for the farm. The strength of these bullocks and implements is to be judged. If there are surplus or uneconomic units of bullocks, etc., they will have to be replaced so as to reap the fullest advantage out of them, Only so much and of such strength shall be kept for the use of the farm as they yield the maximum returns at the minimum of cost of repairs and maintenance.

(Contd. on page 320)

COMMUNITY DEVELOPMENT PROGRAMME IN INDIA

By : Prof. S. L. Doshi

THE concept of Community Development programme as representing an all-round development of rural life, through people's own effort, is not quite a new phenomenon to India. It has been tried in the past. One can refer to such efforts as those of the constructive workers trained by Mahatma Gandhi or poet Tagore at Shantiniketan, or Mr. Spencer Hatch of Y. M. C. A. at Martandam, or the rural reconstruction scheme of the former Baroda State or in more recent times, the Sarvodaya scheme in Bombay and the Firka Development Scheme in Madras and the pilot projects at Etawah and Gorakhpur in Uttar Pradesh. But these were all sporadic efforts and had obvious limitations.

There are two important aspects in which the present programme of Community Development differs essentially from the earlier efforts. First it aims at securing an integrated development of all sides of our rural life instead of only some aspects in isolation. Secondly this programme aims at developing the instinct of self-help, confidence and initiative in the minds of the people themselves, so that they may become conscious of their talent, productive energies and may use the same for the ever growing economic development of the nation.

Programme

It is a multipurpose programme. The main aim is to develop the social, cultural and economic life of the community. Since the prosperity of rural India is dependent largely on agriculture, it has had the pride of place in the programme from the very beginning. This emphasis on agricultural production is more marked at present. Under the Second Five Year Plan increased attention is also being given to

(i) the development of cottage and small scale industries as a means of providing fuller and increasing employment;

(ii) the formation of new co-operative societies and strengthening of existing societies in order to bring every family in the area under the influence of the movement;

(iii) the promotion of Panchayats as the basic institution for local self-government;

(iv) improved village communications;

(v) extension of facilities for primary middle and higher secondary education, social education and library service;

(vi) the provision of sanitation and public health services, medical aid, prenatal and antenatal care and midwifery services;

(vii) the provision of improved technique and designs for rural housing in rural cum urban areas ; and

(viii) the provision of community entertainment by utilising local talent and culture.

If India is to earn the title of a true

social welfare State, we must cater to the needs of the Indian villages. There must be economic democrary between the urban and the rural sectors. If one of the two remains backward, the other too is dragged down. India as we already know, is wedded to a socialistic pattern of society and social service is the settled policy of our state. The Community Projects are only a limb of that vast and all embracing programme – the uplift of the entire backward population of India. As pointed out by Dr. K. L Shreemali in one of his convocation addresses, "we are building up a culture based on social justice and equality. Unless there is social justice and equality, there is no freedom; unless there is freedom, there is no creative energy; unless there is creative energy, there is no culture, unless there is no culture, there is no national progress." The purpose of the Community Projects is to secure social and economic justice for toiling millions of rural India shrouded in death like pallor and silence.

Briefly the aim of the movement is "to produce social change, to assist rural India, to build up a new life for itself, to create in the millions of rural families a burning desire to change their old time outlook and to arouse enthusiasm in them for new knowledge and new ways of life. The entire movement is based on self-help and cooperation and the recognition by the people of the village that their interests are closely interlinked. It should develop as a people's movement, the function of the officials being that of giving advice and organising supplies and services and credit."

Evolution

The Community Development Programme was launched on October 2, 1952 in 55 selected projects, each project covering an area of about 500 square miles with about 300 villages and a population of about 2 lakhs. The experience of the first Community Projects and the popular enthusiasm aroused by them emphasised the need for rapid extension of the programme to other parts of the country. But due to lack of adequate funds a programme somewhat less intensive in character called the National Extension services was launched side by side in October, 1953. The National Extension Service is the basic organisation on which has to be built the living structure of the Community Projects. Before April, 1959 the programme was carried on in three different phases as under

(1) extensive development under the NES programme;

(2) intensive development under the Community blocks and finally;

(3) the return to the NES programme as a permanent feature of rural development throughout the country.

The Balwant Rai committee recommended a revised programme envisaging two stages of five years each and abolishing the distinction between the NES, Intensive Development and Post Intensive Development stages. Before entering on the first stage every block undergoes a "Pre extension phase" of one year during which the programme is exclusively confined to agricultural development. As the revised programme is intended to be executed with the present allotment of Rs. 200 crores provided in the second plan, a certain staggering of the Plan coverage has become inevitable. The complete coverage will now be achieved by October

1963 instead of April, 1961.

The programme covered 2,708 blocks, 360 thousand villages and 17.92 crore persons on Oct. 2, 1959 (See Table No. 1) Government expenditure and people's contribution amounted to Rs. 153.97 lakhs and Rs. 79.78 lakhs respectively on Oct. 2, 1959. (see table No. 2). The programme received 14.42 million dollars from the government of U. S. A. under T. C. M. operational Agreement for import of equipment. Assistance from the Ford Foundation was also received for the training of project personnel.

TABLE I

SOURCE : INDIA, 1960

Coverage Of Community Development Programme *

(April, 1959)

State/Union Territory.	No. of blocks delimites	No. of blocks allotted as on 1-4-59 Stage1.	Stage2.	Stage3.	Population covered (thousand persons).	Villages covered	Area Covered (sq.miles).
Andhra Pradesh	447	161	61	222	1,56,74	14,873	50,821
Assam	152	42	27	69	37,66	12,287	22,706
Bihar	575	254	38	292	1,96,22	38,784	23,360
Bombay	659	211	84	295	1,96,52	37,619	91,644
Jammu & Kasdmir	52	48	4	52	23,58	5,842	47,562
Kerala	142	55	18	73	67,30	862	5,996
Madhya Pradesh	416	151	72	223	1,38,23	42,773	80,205
Madras	358	109	58	167	1,41,60	8,691	22,888
Mysore	268	99	37	136	1,08,53	14,513	50,737
Orissa	307	119	24	143	92,06	31,408	30,685
Punjab	228	90	43	135	92,97	18,133	25,793
Rajasthan	232	86	33	119	78,75	18,307	55,518
Uttar Pradesh	899	317½	89½	407	2,65,56	57,692	55,723
West Bengal	314	123	23	146	1,08,93	19,919	15,852
Union Territories	151	51	20	71	26,26	16,865	26.611
Total	5,217	1,916½	631½	2548	17,30,91	3,39,518	6,06.011

* 2708 blocks, 360 thousand villages and 17.92 crore persons were covered by Oct., 2, 1959.

TABLE - II

SOURCE : 1960

Expenditure And People's Contribution *

(April, 1, 1959)

	During First Plan	During Second Plan 1956–57	1957–58	1958–59	(Rs. in lakhs) Total	TOTAL
1. Block Head Quarters (including transport office building equipment etc.)	9,62	5,13	9,28	11,62	25.93	35,55
2. Agriculture and Animal Husbandry	3,52	1,76	1,68	1,82	5,26	8,78
3. Irrigation and reclamation	8,08	4,74	6,97	9,12	20,83	28,91
4. Health and Rural Sanitation	4,52	2,29	3,12	3,01	8,42	12,94
5. Education	2,65	2,52	2,54	2,16	7,22	9,87
6. Social Education	1,95	96	1,53	1,97	4,46	6,41
7. Communications	6,64	95	2,11	1,80	4,86	11,50
8. Village Industries	1,78	1,05	84	78	2,67	4,45
9. Housing	36	1,34	1,29	2,16	4,79	5,15
10. Un-classified (including imported equipment, suspense charges etc.)	7,76	2,96	1,36	5,22	9,54	17,30
Total	46,88	23,70	30,72	39,56	93,98	1,40,86
People's contribution Total	25,13	16,32	16,30	16,84	49,46	74,59

***Government expenditure and peoples contribution amounted Rs. 153.97 lakhs and Rs. 79.78 lakhs respectively.**

Democratic Decentrallsation

Community Development is no doubt a comparatively new programme and dynamic one requiring changes and adjustments from day to day in the light of experience gained in regards to its working. It was felt by the critics that like many other movements instead of starting from the bottom, taping local resources in the shape of local enthusiasm and local agencies, including human and institutional, it has been sponsored from the top, multiplying and creating new agencies instead of using existing ones. The major findings of the COPP study team was that in most cases locel representatives of the people had

not been consulted either in the formulation of schemes or fixation of targets. On the basis of the recommendations of the COPP study team authority is now being gradually transferred to statutory elective local bodies. Nine states out of fourteen in India such as Rajasthan, Assam, Andhra Pradesh, Madras, Mysore, Madhya Pradesh, Kerala, Orissa and Uttar Pradesh have already enacted legislation in this regard.

The Scheme envisages a village panchayat as the administrative unit at the village level functioning through village committees, where the panchayat covers more than one village. The members of these Committees will be nominated by the Panchayat to ensure cooperation of all interests. The Panchayat Samiti at the block level will consist of Sarpanchas of village Panchayats who are directy elected by the people. There will also be representatives of special interests like agriculture, Scheduled castes and tribes and women; the power to coopt will not rest with the government but with the members of the Panchayat Samities. The Zila Parishad at the district level will be a house of elders. It will consist of Pradhans of Panchayat Samities, members of the Parliament and State Legislative Assembly representing the area. The Collector will be a non-voting member.

The Panchayat at the village will be the basic institution for Planning and executing the development programme. The Samities like the Panchayat will have full freedom in framing the budget or formulating its annual plans for development. The plans and schemes will, however, have to be within the frame work of the State Plan.

The funds of the Panchayat and the Panchayat Samiti will consist of

(1) grants for Liabilities transferred to them:

(2) annual ad-hoc grants for a fixed period;

(3) matching grants for these schemes execution of which has been transferred;

(4) Loans advanced by the state government or raised by the samiti;

(5) Income accruing from taxes.

The Zila Parishad will work as a supervisory and co-ordinating body and examine budgets of samities. This, however, will not mean modification in the proposals submitted by the Samities. The Zila Parishad have the right to make suggestions for the consideration of Panchayat Samities.

It is too early to pass any remark on its success or failure. In the words of Shree S. K. Dey "The task is going to be very hard for the Government servant, down below, who for centuries has paraded on others, to abdicate his power in favour of the people, to surrender the awe in which he is held by the people. It is going to be harder still to build for himself a new stature, shorn of power, which can be based but on vertical growth. It is not going to be easy either for representative Panchas or legislators to surrender the mystification that surrounds their position vis-a-vis the people, in favour of new comraderie that has to be built up and nurtured a fresh. The representatives will have to be the purveyors downwards of the knowledge and wisdom from the people such as can activate the apex institutions with life and vitality and

touch of the soil and their thought and action.

U. N. Mission Report

Recently a study team by the U. N. Evaluation Mission consisting of Messers M. J. Coldwell of Canada, Dr. Margaret Reid of London University and Professor Renu Dumont of the National Institute of Tropical Agriculture, Paris, toured the country covering almost all the states. The tour lasted for three months from 5-12-1958 to 3-3-1959. The Mission was assigned to asses the Community Development Programmme. It is a brilliant report and the Mission deserves a tribute fcr the very thorough study of the programme of Community Development and for having offered so many useful and helpful suggestions which deserve the earnest consideration of those who frame and formulate the programme.

Though India's Community Development programme has been hailed by United Nations Evaluation as "one of the major experiments of the 20th Century" the results of which are of world-wide interest yet it has pointed out certain defects for consideration. Some of the points touched are

(1) **Inefficiency**:

The U. N. Mission Report has made a very valuable contribution in this respect. It points out that about 25 per cent of the block posts are vacant and no less the 25 per cent of the staff are inefficient.

(2) **Training :**

The U. N. Mission has observed "That though training Courses laid down certain layers of information in the minds of the trainees, they do not stimulate a lively, alert, and sensitive approach to village and rural problems "with the result" that they do their work with minds lulled to sleep by much learning and teaching and anything but alert to the real problems of the villages and to the necessity for adopting, questioning and testing all that they have heard in their training course.

This is our every day experience that the training which these people have received is only mechanical and not effective in the least. Take for instance the Gram Sahayaks. We are told that something like 22 lakhs of Gram Sahayaks were trained by September, 1959 and something like 55,000 camps were organised for imparting training for this purpose. We do not know whether there is any estimate of their contribution to the development activities.

(3) **Panchayats stronghold of vested interested.**

In the U. N. Report alao they have mentioned that the Panchayats are becoming the strong-holds of the village vested interests, the upper caste people and the well to do money lenders and all sorts of such people. It is inevitable in the initial stage. But if the people once taste their powers they will assert their rights and elect the right type of people to the Panchayats.

In the end it would be a hasty judgment if we were to characterise the development projects a failure in the light of our eight years experience. The villages rooted in the traditions of hundreds of years cannot be galvanised into activity effectively over night. It is enough that Indian villager today realises that he can at last look up to a permanent agency for help and guidance. Social planning cannot yeld quick dividends.

Our Prime Minister has again and again

referred to Community Development as a revolutionary programme. On one occasion he has said, "I think nothing has happened in any country in the world during the last few years so big in contents and so revolutionery in designs as the Community Projects in India." He has advised the programme, "not so much for the material achievements that they would bring about, but much more so because they seem to build up the community and the individual and to make the latter the builder of his village centre and of India in the large sense."

When all has been said and done the future of Community Projects will depend on the success with which our country can produce leaders at all levels whos can release in men and women will serve high ideals in every day life.

We are only satisfied that the trickle that was born on Bapu's birthday, October 2, 1952 has grown to be a surging torrent. The ship is on the sails. Shores have receded far behind. The wide ocean around, far as eyes can see, the minds can fathom. Blue waters from the unknown play against the star board. They whisper "No fear, new world yonder, master is on the wheel".

Causes Of Low Crop Yields In India And The Measures To Improve Them

(*By D. K. Garg*)

THE battle continues. One phase of the 'Inquilab' was over on August 15, 1947, the day of release from the shackles of foreign rule. The other phase began immediately afterwards. The battle must be won – the battle to bring in the plenty we longed for – plenty of food. Food was the item we were most in need of. As a free nation we could not afford to stand with a beggar's bowl before others. The partition of the country in 1947 had magnified the normal food deficit in India created by the separation of Burma and the war and necessitated successive increase in imports in the subsequent years.

The characterstic feature of Indian agriculture is the low yield per acre of most of the Principal crops grown as compared with the other countries of the world. Table I discloses the comparative position.

TABLE I

Yield per acre of Major crops in principal countries 1949 (in lbs./acre)

Country	Wheat	Paddy	Cotton	Sugarcane (Raw Sugar	Maize
Australia	1,044	4,220	78	18,070	1,472
Canada	803	—	—	—	2,810
China	937	2,141	152	2,210	1,168
Egypet	1,748	3,533	491	10,411	1,775
Italy	1,329	3,997	98	—	1,853
Japan	1,534	3,462	107	20,944	1,133
U. S. A.	892	2,203	285	33,607	2,177
India	584	1,032	85	3,052	560

Source F. A. O. Year Book, 1950, Vol. IV Part I.

The more important thing is the gradual fall in the yield of principal food crops as shown in Table No. II.

TABLE II

Yield in lbs. per acre

Crop	1936-39 (Average)	1945-46	1948-49
Rice	793	703	699
Wheat	618	541	573
Gram	546	463	519
Jawar	435	322	303
Maize	659	594	529

Source: Directorate of Statistics & Economics.

Further there is evidence to show that the yields were much higher about two centuries ago. The increase in population has made it necessary for cultivating new lands with little or low fertility and the process has been going on ever since. On the other hand, the land is under continuous cropping with no attempt to improve or even to maintain its fertility.

The food crisis in 1943 known as the Bengal Famine, was the genesis of the 'Grow More Food Campaign' initiated in the same year. The fundamental problems of agriculture were consequently intensified and the urgent need was, more than ever, to meet them with courage, intelligence and vigilance.

No single factor can increase the yield of crops. In order to have the maximum possible yield, all the following factors are to be combined :

1. Introduction of seed of improved varieties.
2. Application of manures and fertilizers.
3. Proper utilization of irrigation water.
4. Control of insect pests and diseases.
5. Control of weeds.
6. Usk of improved implements.
7. Better cultural practices.
8. Crop rotations.
9. Soil Conservation to prevent soil erosion.
10. Consolidation of holdings.

1. Introduction of seed of improved varieties :—

The value of pure seeds of a good variety is hardly realized by the peasants in India and it is not unusual for the cultivators to use seeds of very doubtful quality borrowed from the local man. This reacts unfavourably both on the quality and quantity of the produce of the crop and a thorough appreciation of the points which should be taken into consideration is of the utmost importance.

Naturally, the selection of the variety is the major decision which has to be made. Though the area under improved varieties has increased steadily during the past few years, when compared with the total area under cultivation, the area under the improved varieties is insignificant as shown below in Table III.

TABLE III

Total cultivated area & the area under improved varieties

(in Lakhs of acres)

Crop.	Total area cultivated	Total area under improved varieties	Percentage
Sugarcane	40.0	32.2	80.0
Jute	21.8	11.2	50.0
Wheat	336.1	69.6	20.6
Cotton	260.0	50.4	19.2
Rice	834.0	35.8	4.3
Groundnut	58.6	2.2	3.4

Russel; Report on the work of I. C. A. R., P. 47

In most cases the extra yield obtained from improved varieties is more than 10% but in sugarcane over 60% increase in yield has resulted by introduction of improved varieties.

The responsibility of finding out better varieties and of spreading them among the cultivators has already been taken up by the Government. New varitieties superior to the ones already grown by the cultivators in respect of yield per acre, quality, ability to resist disease or suitability to the special conditions prevailing in a given area can be evolved. According to the Royal Commission on Agriculture in India 'Selection Offers the readiest means of affecting improvements in Indian conditions'.

A good seed means that it should be from an improved variety. It must be free from any foreign matter or seeds of weeds and other crops. It must have good germination. It must be free from seed-borne diseases. Good plump seed is essential whatever the crop, for big seeds possess good reserves of food and produce, therefore, stronger seedlings than smaller ill-nourished seeds.

In most European countries and in the U. S. A., private agencies like seed merchants supply the farmer with good seed of reliable quality. The absence of such private agencies in India is a great handicap. The Agricultural Department has, therefore, had to undertake also the supply of the seeds of the improved varieties.

Under the 'Pure Seed Act' in Punjab wheat C591 and C518 had become very popular amongst the cultivators. The cultivators in a compact area were compelled not to sow any variety other than that recommended by the Department. This act affected the welfare of the cultivators as a whole,

There is a great feeling of satisfaction when one has bought the best seed on the market, but there can be much greater satisfaction when after care and attention one sows home-grown seed of equally high standard. Therefore. each cultivators should try to reserve the best part of his produce as seed for the next year.

2) **Application Of Manures And Fertilizers :**

Plants require some nutrients and these they obtain partly from the air and partly from the soil. Most of the nutrients necessary for healthy growth are present in the soil though not always in sufficient quality, and from the farmers standpoint manuring concerns the addition to the soil of those substances in which it is so deficient that good crops can not be obtained.

Pearl S. Buck in an article "Technical assistance a two way traffic" mentioned "China is a land rich in food and the Chinese are generous feeders. Their famines have always come not from an actual shortage of food but from disasters such as flood, drought or war. Her agriculture is highly developed. Modern agriculture has not much to teach the chinese farmers beyond some methods in seed selection and insect and disease control".

The Indian cultivator has much to learn in this respect from the farmers of China and Japan. India represents a different picture from China. In the opinion of the experts. (Howard 1924, Russel 1933, Dhar 1947 and Mukhtar Singh 1948) the continuous cropping of land without adequate

manuring exhausted the average Indian soils. The soil must get back, in the form of manures, the nutrition which is generally taken out of it in the shape of plant food. The best principle for the maintenance of soil fertility is to have a 'Bank account' with the soil.

In practice three elements are generally required, namely nitrogen, phospherous, and potash, although sometimes a soil is deficient in the trace-element also. The most important plant foods which Indian soils lack are nitrogen and organic matter, and in the words of Royal Commission on Agriculture in India, "the manurial problem in India is, in the main, one of nitrogen deficiency". The Femine Commission report published in 1945 says "The manuring problem of India, is in the main that of a deficiency of nitrogen in the soil, though in some parts of Peninsular India, phosphates are also needed".

The calculation of the nitrogen requirements of India are bound to be exceedingly vague but they can give at least an idea of the order of magnitude of the problem. Dr. Burns calculated that the total nitrogen required for crop cultivation in India was 5,911 million lbs. which could be had from 13.2 million tons of sulphate of ammonia (N2-20%) or 526 million tons of farm yard manure (N2-0 5%).

The nitrogen deficiency of the soils in India can be overcome by (a) the careful conservation and proper use of farm yard manure. (b) the manufacture of composts (c) the use of green manure (d) the cultivation of leguminous crops (e) the conservation of the large supplies of combined nitrogen which is at present lost by the unrestricted export of oil-seeds and animal products like bones and (f) the use of chemical fertilizers.

The plant foods can be supplied by the addition of organic and inorganic manures. The importance of humus and fertilizers in our soils would be realised if the findings of Sir John Russel during his study in 1937 of the Indian experiments are taken into account. He has revealed the fact that one maund of ammonium sulphate used in conjunction with a light dressing of F. Y. M. or compost increase production by 4½ mds. of paddy, 3 mds. of wheat or 15 mds. of potatoes.

In India the total production of fresh cow-dung is estimated at 800 million tons on the basis of the 1951 live-stock census. But it is estimated that only forty percent of this is used as manure. Out of the remaining quantity 40% is used as fuel and 20% is lost due to difficulties in collection. The only way of stopping this wasteful practice is to provide an alternative supply of fuel. If the solar cookers are brought within the reach of the farmers, they may form a suitable alternative fuel. The use of cow-dung gas plant in villages should also be popularised. Out of 3000 towns, where local bodies exist, composting is done in 1684 and the annual yield is about 1.7 million tons. But the possibilities are for the production of about 1,00,00,000 tons of compost manure annnually by a proper utilization of the urban waste in India. It has been pointed out that there is a considerable scope for better utilization of sewage and sullage whose value for irrigation requires as much attention as for manurial purposes. It has been also estimated that 300 million gallons of sullage are going to waste and can be utilized immediately for the preparation of good compost. In towns equipped with underground drainage system utilization of the sewage

and sullage water should be arranged for irrigating agricultural crops.

In China and Japan there is no organic refuse of any kind which eventually does not find its way back to the land as manure. It is reported that as much as 67 per cent of the nitrogen applied to crops in those countries is in the form of compost. Bonemeal is a good phosphatic manure and, therefore, the animal bones, a major of which now goes as a waste, should be processed and used as manure. In the event of shortage of F. Y. M. green manuring should be practiced. Instead of leaving the fields fallow in rainy season, green manuring will always increase the yield of the succeeding crop. Growing of early maturing pulse crops will add to the total profits of the cultivator and simultaneously will also maintain the soil fertility.

A mixture of organic and inorganic manures has been usually found giving higher yield in most of the crops. Therefore, the application of inorganic manures like sulphate of ammonia, superphosphate etc. should also be encouraged. India still lacks in the production of inorganic fertilizers and, therefore, the establishment of more fertilizer producing factories is the need of the hour.

It is not only the quantity of manure or fertilizer which increases the crop yield, but the time and methods of application are also equally responsible for it. A manure or a fertilizer must be applied at such a time and in such a manner there it becomes most available to the plant when it is needed. For example, the application of ammonium sulphate as top dressing at the main growing time of sugarcane crop always gives best results. Similarly, the application of ammonium sulphate as top dressing to the wheat crop under irrigated conditions at the time of first irrigation i. e. about a month after sowing, has always given the best results.

(3) **Proper Utilization Of Irrigation Water.**

As water is the medium through which the nutrients in the soil become available to the plants, it's adequate availability is the most important consideration in crop production. In all other parts of the country except the heavy rain-full tracts e. g., the western coast, Assam and the northern belts adjoining the Himalayas in the East Punjab and Uttar Pradesh States, the average annual rainfall is below about 50". In the heavy rainfall tracts, the rain comes in torrents during a short period and runs into the rivers. The high rainfall in these tracts has even a harmful effect in so far as it causes erosion which can be prevented through soil conservation practices like terracing, bunding, contour cropping etc. Therefore owing to the insufficiency or the uncertainty of rainfall or its unequal distribution agriculture in India is just a gambling.

Though the development of irrigation proceeded at first on the principle of profitability, the great famine of 1877-78 brought to the fore-front the necessity for protecting agricultural areas liable to drought and famine by the construction of irrigation works on the basis not of profit but of social and humanitarian advantages. The total river water resources in India were computed some years ago at 1356 million acre feet, of which 5.6 per cent i. e. only about 76 million acre feet was utilized in 1951. It is estimated that there is a scope

for utilizing beneficially about one third or 450 million acre feet of the total annual flow of the major rivers.

There are numerous other rivers and riverlets in which waters are available intermittently during the rainy season and these are capable of being stored in small reservoirs. Substantial water supplies are also available from underground sources. The area irrigated from all sources in 1950-51 was 51.5 million acres. This constituted about 16 per cent of the total cultivated area of the country. Additional irrigation, amounting to about 6.3 million acres was estimated to be available by 1956 from major and minor irrigation works, taken up during the first plan. On full development, these works will irrigate about 22 mllion acres. An addition of 10 million acres was expected to be made to the irrigated area from minor irrigation works taken up during the first plan. During the second plan it is proposed to bring under irrigation an additional area of 21 million acres, 12 million acres from large and medium projects and 9 million acres from minor irrigation works.

Even if all the estimated area is brought under irrigation by the end of the second five year plan, the percentage of area dependent on rain-fall will be about 65 to 70 per cent. Therefore, in order to have a scheme of controlled water supply for the maximum area possible, minor constructions and local works of utilizing surface water, hold immediate possibilities. It is, however, clear that the water potential in the country is more than adequate to irrigate the whole area under cultivation. The problems are more in the methods of utilizing them.

The high average yields of rice in Japan, Italy and Spain are due to its cultivation under irrigation and heavy manuring. In Japan about 95 per cent of the rice area is under irrigation.

It is well-known that the recorded increase in yields of wheat and rice from irrigation vary from near by 30 to 120 percent and also the hazards due to unfavourable weather conditions are minimised by irrigation. Crop cutting surveys in Madras State in 1941-42 indicated that increased production of paddy is possible in that state by irrigation alone production would increase by 67 per cent; by manuring by 33 percent ; by the use of improved seed by 20 per cent and by combining irrigation with manuring by 56 per cent.

It is not only the quantity of water applied to the field which increases the crop yield, but its time of application and proper utilization are also equally responsible. Irrigation should be given at the best time when it is needed by the plant. Timely irrigations will always give more yield than irregluar ones. Moreover, such a method of irrigation should be adopted that every inch of water is utilized for the benefit of the crop. Over irrigation is more harmful than under-irrigation. Irrigations at short intervals with the same total quantity always give more yields than irrigations with long intervals. Least amount of water should be wasted while irrigating the fields.

(4) **Control of insect pests and diseases :** The Indian Famine Commission (1945) and the council of the Food and Agricultural Organisation of the United Nations has laid special stress on the importance of plant protection as being "the most important single factor" in stepping up food

production immediately in an appreciable manner. In U. S. A. and Canada it has been estimated that 1/5th of the agricultural production both in field and storage is being taken away by insects and other enemies. It has been estimated that insects consume 10 per cent of the world's crops and probably 20 per cent of the crops grown in the tropics.

The lack of adequate means to control the insect pests and diseases of crops throughout the country has been one of the major factors that has undoubtedly led to the consistently low yields of crops in India. In India losses from insect pests and diseases on crops and forest traces were calculated at £ 13,60,00,000 in 1921. The loss of grain has been estimated to be 8 million tons every year.

For preventing the spread of insect pests and diseases, the cultivator should sow the disease resistant varieties. Special care should be taken while selecting the seed for sowing. The seed should be free from all diseases. If the attack is still visible in the field, control measures, mechanical, chemical and biological should be put into practice.

(5) **Control of weeds :** Agriculture has been called a perpetual controversy with weeds, as the need for weed control was felt from the time the early man first realized that weed was competing with the crops, he was trying to grow. Production of almost all crops is largely a battle with weeds. Weeds add a heavy burden to human existence.

Losses due to weeds though generally recognised are far greater than usually realized. The weeds cause the losses in the following ways :

1. Weeds compete with crops for water, light and mineral nutrients.
2. Weeds reduce the yield of crops.
3. Weeds hinder agricultural operations.
4. Weeds reduce the quality of crop products.
5. Weeds serve as collateral hosts to crop pests and diseases.
6. Weeds parasitister crop plants.
7. Weeds poison man and livestock.
8. Weeds reduce quality and quantity of livestock products.
9. Weeds choke drains and irrigation channels; spoil water.
10. Weeds spoil land and reduce their value.
11. Weeds encroach on non-arable lands.
12. Weeds impair the health of human beings.

In U. S. A., the weeds are responsible for a loss of 3,000 million dollars annually. It is more than double the combined loss by insect pests and diseases. In Canada the losses due to weeds in yield alone are estimated to be over a million dollars annually. Before World War I, it was estimated that 16 million pounds sterling per annum were lost by farmers of Great Britain in getting rid of weeds.

In India we don't have any information about the total losses by weeds, but the scattered information about some of the weeds will give an idea of the magnitude of weed problem in our country. It was estimated that about 10 million acres of land in Bundelkhand region of U.P., Madhya Pradesh, Bhopal and Madhya Bharat were infested with Kans and that if all this could be reclaimed, the country would be able to

secure about three million tons of additional food-grains. The C. T. O. could reclaim only about 1.2 million acres of the above area by the end of 53-54.

Wild rice is a serious menace to rice cultivation particularly in Madhya Pradesh, Bombay and Bihar. It causes a loss of over 37 lakh acres of 'biasi' paddy in Chhatisgarh, M. P., alone amounting to more than 22 lakhs of rupees annually. Deep water paddy worth 11 crores of rupees is supposed to be destroyed in Bengal due to water hyacinth.

Argemone mexieana and Pluchea lanceolata are found on 1,56,866 and 1,24,284 acres of land respectively in U. P. alone. Orobanche causes serious damage to tobacco crop, the loss in Guntur District alone was reported to be about 25 lakhs of rupees in 1940 and in Bombay nearly 10 lakhs of rupees. Striga in Bombay alone causes a loss of ten million lbs. of Jowar grains amounting to a total of ten lakhs of rupees. In U. S. A., the annual loss due to cattle poisoning is estimated to be over 200 million dollars.

Therefore, in a country like India with the largest cattle population of the world, the losses due to cattle poisoning must be many times more than other countries. In our country, the loss incurred annually through poisoneous plants is drop in milk yield, loss of meat meat and wool, abortion and sterility, temporary or permannent injuries to the various organs of the body and may exceed 20 per cent of the value of the total livestock of India or nearly 400 crores of rupees.

According to Basak, Bengal sustains an annual loss of some hundred million lbs. of fish estimated to cost about ten crores of rupees due to water hyacinth.

In India, Howard estimated that the loss in the yield of cotton caused by Kans is at least a third of crop. In rice, the loss is estimated to be 5 to 30 per cent in Madhya Pradesh and Bombay. The reduction in the yield of crops in general by weeds is estimated to be upto 30 per cent. The losses are more on irrigated lands.

The three fundamental objectives of the various methods of combating weeds are prevention, control and eradication, weed infection, control and eradication are events of sequence ; weed infection makes us liable to notice it and take the control measures, which if found insufficient to check the weed, compel us to look to and plan eradicatory measures. Prevention means the exclusion of weeds from areas not yet infested or preventing their spread from infested to clean fields. Following are the methods by which the introduction and spread of weeds can be prevented :-

1. Use clean seeds.
2. Do not use manure unless the viability of weed seeds has been destroyed by through fermentation.
3. Do not permit live-stock from infested areas to move directly to clean areas.
4. Clean the implements before moving from infested areas.
5. Do not feed screenings, grain or hay containing weed seeds without first destroying their viability by grinding, or cooking or ensiling.
6. Avoid the use of sand and soil from infested areas.
7. Inspect nursery stocks for presence

of weeds and of tubers and rhizomes of perennial weeds.

8. Keep the banks of irrigation ditches free from weeds.
9. Keep fence lines, roadsides, railway rights of way and all other uncropped areas free from weeds.

If the fields are still infested with weeds the following control measures can be taken :

1. **Mechanical methods :**
   i) Hand pulling of the weeds.
   ii) Hand hoeing of the fields.
   iii) Destroying the weeds with tillage implements.
   iv) Mooring or cutting the weeds from groundlevel.
   v) Flooding of the field.
   vi) Burning of the weeds.
   vii) Smothering the weed with non-living material like straw.
2. **Cropping and competition methods**
   a) Proper seed rate should be used.
   b) Sowing should be done at the proper time.
   c) Smothering or competitive crops like Sanai, oats, berseem etc. should be grown.
   d) Crops should be taken in rotation.
3. **Biological methods**
   i) Introduction of some disease or pest so as to destroy the weed.
4. **Chemical Methods :**
   a) Spraying of the non-selective herbicide on the weed so as to kill its growth.
   b) Spraying of the selective herbicide on the crop so that the weeds may be killed even without affecting the crop. By spraying 2,4–D hormone in the wheat field it kills most of the weeds.

Chemical weed control has not become very popular in India. It is very popular in other countries like USA, France, England, New Zealand and Australlia. In India also it has been experienced that the chemical weed control can be profitably taken into practice at least on irrigated areas, because of the abundance of weeds under irrigated conditions. This method is quite helpful for big farms also where manual labour is not available.

(6) **Use Of Improved Implements :**

The production per worker is primarily a function of the tools and implements with which he works. In this respect India is still in a primitive agricultural stage. The 'Desi' plough and other implements in use are not essentially different in shape and in work capacity from what they were a thousand years ago. As a result, the production in India is nearly the lowest per worker of any country. It has been said that the common Indian plough merely scratches the surface of the soil. The use of these old implements reduces the yield from land, adds to the labour of the farmers and reduces the income.

Use of improved implements contribute to increased yields. The aim in India should be to improve the indigenous implements rather than to introduce costly machinery of the type used in other countries, under totally different conditions. Again in India we have a variety of soils and climates that call for variety of implements in different tracts and there will be no single type

which will suit the whole of India. Any improved implement suggested to the farmer in India should satisfy the following conditions :

1. They should be cheap and within the means of the cultivator.
2. Their construction should be simple so that even illiterate farmers can assemble and dismantle them.
3. They should be light enough to be worked by the cattle owned by the farmer.
4. They should be capable of being repaired quickly in the village itself.

(7) **Better Cultural Practices** :

There are innumerable items going under this head e. g. ploughing, sowing or planting, harrowing, seed-rate, spacing, interculturing, harvesting etc. Cultivators have been following the methods which they have found to be the best with their experience. In several cases the existing practices need some improvement.

It has been experienced that cultural practices, if not done at the right time result in the loss of yield amounting to 20 to 30 per cent of normal yields. Similarly, the effect of late sowing results in the decrease of yields. It is roughly estimated that in nearly 30 percent of the cultivated area cultural operations are delayed due to lack of proper facilities. Certain other cultural practices also can add to the increased crop yield. Transplanting of paddy definitely brings more yield than any other method. Seed treatment in berseem increases the yield many times. Similarly, on heavily fertilized soils, trench system of sugarcane planting gives more yield. Cultivators have a tendency to put more seed-rate. Proper seed-rate should be taken so as to have a good stand of the crop which gives more yield. A well-prepared seedbed serves as a better home for the seed and the plant. Practices should be such so as to check the soil from erosion and maintain the soil fertility also.

Mechanization of certain agricultural operations e.g. deep ploughing, harvesting, water-lifting etc. also increases the agricultural production.

(8) **Crop rotations :**

The yield from the land can be increased by a good system of rotation of crops. A rotation of crops utilize more fully the properties of the soil than concentration in the same crops year after year, as different plants make different demands on the soil. Therefore, the importance of crop rotations as a factor in increasing production and improving soil fertility is well-known.

Experiments conducted at Muzaffarnagar, U. P., show that the maximum yield is secured by a combination of cotton, Sanai and Sugarcane. Similarly, a two years of rotation of groundnut plus Arhar – sugarcane gives more yield. Experiments in Delhi have shown that berseem in the rotation builds up soil fertility. Experiments have been conducted to show the importance of a Kharif pulse like arhar or a rabi pulse like gram for the maintenance of the fertility of soils in the wheat tracts of Madhya Pradesh. The inclusion of leguminous fodder crops in a system of crop rotation will solve some of the main difficulties of Indian agriculture. This practice needs much popularity amongst the cultivators.

(9) **Soul conservation to prevent erosion**: A huge amount of fine soil, the

natural capital of the farming industry, is lost in India on account of soil erosion. It has been estimated that the amount of soil lost by erosion ranges from 1 to 115 tons per acre in different parts of India. Experiments conducted at the Dry Farming Station, Hagari in Madras, reveal that every year 1/20th of an inch of the top fertile soil is washed away by the rains. Such erosion of the soil gradually reduces its fertility and consequently makes the land unfit for cultivation. Soil erosion is the most dangerous enemy to the agriculture of our country as it works so silently and slowly yet steadily that though we see it every day in our life, we neglect it.

The main agencies responsible for erosion are wind and water. The former plays very important part in the arid regions. The erosion in this case can take place in any direction irrespective of the force of gravity. In humid regions water is responsible for most of the erosion. The erosion caused by water can by divided into three classes (1) sheet erosion (2) Rill erosion and (3) Gully erosion.

Following measures can be adopted for controlling the soil erosion :-

i) Use of land according to its capability.

ii) Cultural methods.

iii) Mechanical methods.

The least expensive and the most effective means of controlling erosion are those which are based on correct land use. No human agency can control Soil erosion at reasonable cost if arable farming is practiced on steep banks of river. Vegetation is the nature's way of controlling erosion. The following are the uses to which a land can be put according to its erodibility.,

i. Arable farming

ii. Pasture.

iii. Afforestation.

2. Cultural methods :

The principal cultural methods are as follows :

i) **Crop Rotations :** Land susceptible to erosion should have crops on it all the time particularly on those occasions when rains are expected.

ii) **Addition of bulky manures** : The greater the infilteration and water retention capacity of a soil, more resistant it is to erosion. Thus more the organic matter in the soil, more will be its retention capacity and thus lesser will be the losses.

iii. **Protective cover croping** : Cover crops are very important in preventing erosion. It is necessary that some sort of cover crop should be on the field at critical times.

iv. **Contour cultivation** : This refers to any tillage practice carried on across the the slope on the contour. The purpose is to provide for the greatest possible retention of rainfall and thus prevent soil loss. The furrows between the ridges developed by contour ploughing catch and hold the water and store it in the soil and thus reduces run-off.

v) **Strip Cropping**: The practice of strip cropping divides a long slope into a series of shorter ones. Strips of close growing crops planted across the slope not only decrease run-off and soil loss on that part of the field which they occupy but

will act as filter for the water flowing over them from the part of the field above, which has row crops.

3. **Mechanical Methods**:

The fields with greater slopes should be divided into terraces. Terraces are almost level benches that cross the slope in a series of steps like earthen plat-forms.

(10) **Consolidation Of Hol ings:**

Fragmentation refers to the way in which the land owned by an individual is scattered all over the village area in fields separated by lands possessed by others. If a land-owner, by methods such as the exchanging of fields, has managed to get all his land in one continous block, his holding is said to be consolidated.

When holdings are intensely fragmented the farmers have to move from one field to another and make use of a greater number of ploughs and cattle, of hired labourers and of watchman than would have been the case if the holdings had been compact. According to Mr. Mishra, the expenses of cultivation increase for every 500 meters of distance by 5.3 per cent for manual labour and ploughing, from 20 to 25 per cent for the transport of manure and from 15 to 32 per cent for the transport of crops. Provision for surface drainage and correct levels becomes difficult. In a fragmented holding little use can be made of modern mechanical appliances for ploughing, threshing and other operations and the owner has little incentive to attempt experiments in modern methods of large scale farming.

Thus it becomes necessary that the fragmented holdings should be consolidated.

Last but not the least, it is to be emphasised that intensive efforts on a warlike basis should be made for improving the crop yields. When others can produce more, there is no reason, why we cannot increase our yields. It is reported that production in U.S.A. increa- by 33% from 1939 to 1946 and 3/4 of this increase was from scientific improvement alone, although the same area declined in some cases. In other countries, the improvements evolved at the research stations are adopted by the cultivators, of which hardly a few are aware in India. Latest researches should reach the doors of the cultivator, so that by taking them into practice he can contribute to solve the nation's food problem. Thus in increasing India's food production, it is the tens of millions of small farmers who must take most of the decisions and work hard to make those decisions effective.

Marketing Of Potatoes In Himachal Pradesh

By: Tarlok Singh Sandhu,

HIMACHAL Pradesh, by virtue of its varied altitudes and agro-climatic conditions, possesses vast potentialities for growing cash crop like seed potato. Accordingly, in the field of Agricultural production, the efforts of the Administration are being

directed towards exploiting these potentialities.

The economic destiny of Mahasu district is linked with the cultivation of seed potato as it is much in demand from potato growers in plains. The potato grown in this Pradesh is free from generation diseases, and it meets about 10 percent of the country's seed requirement.

Principally three local varieties, viz., Numberi, Dhankri and Sathu are cultivated in this Pradesh. The improved variety *'up-to-date'* which was introduced by the Department of Agriculture about seven years ago, has brought about a marked improvement both in yield and quality of seed potato. It is estimated that the acreage under this crop is expected to rise by 33 per cent during 1958–59 over 1950–51 level of 18,000 acres. Likewise, there has been a marked rise both in total production and production per acre. The reason is that potato not only gives more food per unit area but also more income than most other crops. It is estimated that, on an average, potato gives a gross income of Rs. 500 per acre as against about Rs. 150 from wheat or rice.

In order to cover the maximun area under potato by improved varieties like *'up-to-date'* and *'Craig's Deziance'* eight potato Development Stations, each under the charge of Regional Potato Development Officer, have been established where disease-free nucleus seed is produced. This need is then further multiplied on the land of 'approved' and 'certified' growers under the supervision of technical staff of the Department who inspects the fields against technical irregularities and suggests the measures thereof. The number of 'approved' and 'certified' growers during 1,958 was in the neighhour-hood of 816 and 1686 respectively, and production of seed potato on their land is estimated at 1.12 lakh maunds which may be valued at Rs. 17.92 lakhs. It is ultimately proposed to organise these growers into co-operative seed Potato growing and Marketing Societies and to market their produce under 'Agmark' label.

This summarises in nut-shell the production policy of seed potato, but the production is limited by the extent of markets. It is, therefore, essential to review the existing marketing conditions with all its drawbacks and to explore the necessary means of amelioration to organise the marketing on scientific lines in order to sustain the extent of demand for seed potato at the same level. The rapid expansion of cold storage facilities in the plains and the spread of seed potato cultivation in other hilly areas is apt to exercise a decline in the demand for seed potato grown in this territory, but organised marketing and relatively lower production cost of potato grown in this Pradesh may help to cancel the effect of such new innovations.

My observation in this territory concluded that the marketing is awfully unorganised. Means of transportation are imperfectly developed. Mules and sheep are the principal source of potato transportation. Many seed pockets are isolated. Only footpaths on topsyturvy hills are the common feature of this Pradesh's economy. Transport charges are abnormally high. The share of grower of the price paid by the trader is equal to the price paid at the depot minus the transport charges and the intermediary's margin. It is safe to assume that the principal grower received only 30

per cent of the price paid by the trader at the seed potato depot located in the principal towns of the Mahasu district. Much of the seed potato fails to reach the market because of the imperfection of trade routes in the interior. Air lifting of seed potato from the unapproachable interior with the assistance of helicopter service will be to the advantage of the growers.

The growers are not conscious of grading and varietal purity. The seed brought to the market is generally the mixture of all varities and all sizes of the tubers, demanding seperation into defined varieties and into grades which incur extra avoidable cost if the seed is cultivated and harvested varietywise. Mixed seed has little utility, as a particular variety is only suitable for a particular state of our union.

Seed potato depot is the source of number of malpractices which ultimately bring bad name to this Pradesh. It is common to find out varietal impurity in seed bags, which results in the partial success of potato crop in the areas where such seed is transported, thus deteriorating the total production of the individual grower and the economy as a whole. The cut bruised, and rotten tubers are also bagged togather which substantiate the losses to unimagniable magnitude by way of rotting and fungal attack during transit and short storage. The practice of adulterating the seed potato with small stones is common. All these adulterous and malpractices ultimately affect the destiny of final growers in the areas where such seed potato is disposed off.

There are number of charges prevelant on the seed potato depot. The mule driver gets 'Moar' (i. e. return commission) from the depot holder on his each return journey, this encourages the mule driver to bring his load only to that depot holder who gives him this favour. The Moar is generally rupee one each time. The Tola (weighman) charges the grower or primary trader with 'Chungi' (i. e. taking some seed potato after the completion of weighing the produce) the chungi varies from 1 to 5 seeds depending upon the volume of produce brought by each individual. The Palledar (assistant to weighman) discounts his charge as Palledari which is very much less than the Chungi. The depot holder charges his own commission. The weighman and Palledar get one anna and half anna respectively for each maund of potato weighed from the depot holder. The Tola and Palledar are professional men who migrate from the surrounding sub-mountainious areas during the potato season only. These men are expert in over weighing the produce when the depot holder purchases from growers and in underweighing when the stock in hand is sold to the merchant coming from distant areas.

If this state of affair continues, it is feared that the extent of 10 per cent requirement of the country chiefly met from this territory will no longer be sustained and the sudden shrinkage of demand for seed potato from this Pradesh may ruin the economic destiny of several growers, and it will be a Herculian task for the territotial Administration to improve the deteriorated situation.

An attempt by the Ministry of Food and Agriculture was made to improve the deteriorated situation by promulgating the Himachal Pradesh seed potato (control) order 1957 under the provisions of Essential Comodities Act of 1955. The order was extended to the whole of District Mahusu of Himachal Pradesh which remained inforce

upto the 31st January, 1958. The order demanded every seed potato merchant to hold a licence and to abide by the rules and regulations regarding potato grading and for the up keep of certain records and accounts as laid down by the Director of Civil supplies, Himachal Pradesh. It was thought that with the introduction of this order certain fraudulant practies shall cease automatically.

The order demanded *'up-to-date'* and *'Numberi'* potato tubers to be graded under two categories. The special grade allowed only those tubers which measured more than 2½" in length and the *'phool'* grade permitted tubers in between 1½" to 2½"in length. Thus A1, and A2, and B1, and B2 were the grades fixed both for *'up-to-date'* and *'Numberi'* varieties respectively. Dhankri i.e. C grade included all long cylinderical oval type tubers corresponding to Mognum Bonum variety. All tubers above 1½" were recognised as Dhankri, Sathu grade included all medium to small sized, round, white or pinkish with deep eyes and may have a pinkish splash on the eyes. Ration grade included tubers of various varieties whose length was below 1½".

Licenses were further required to observe that above mentioned grades should not contain any cut, bruised, damaged or otherwise diseased tubers. The tubers should also be free from foreign material like stones etc. Insect eaten tubers will be allowed provided the extent of damage is slight and the eyes are intact. Growth crocks will be allowed provided the quality of the graded produce is not adversely affected. Green tubers which have a good seed value, will also be allowed if tubers are otherwise sound. But pimpled i.e., nematode-infected tubers in no case will be allowed as such tubers are a source of infection not only in the producing centres; but also in the consuming areas. Blight-infected tubers, which cause discoloration and depressions of the skin surface and scab-infected tubers, which may cause rottage during short storage will not be allowed.

Inspite of these legal rigidities, the quality of seed potato did not improve appreciably. My inspectional activities during the tour of my duties revealed that all the adulterous practices were followed with same intensity as the said Control order failed to cause any serious threat in the minds of the traders. Numerous traders when interviewed complained seriously about the unsatisfactory seed supply. The result was, that the potato prices started exercising a continous decline, resulting lot of stock in the interior as undisposed. The whole of the blame was put on the Control order and the supervisory staff working under the canopy of the Control order. The growers resented a lot and in the ensuing year (1958) the Control Order was made to be lifted with the assistance of the court. This unhealthy defect of the legislation is another serious blow to the developing economy of this underdeveloped area.

However, it is suggested to introduce the Agmark and Co-operative Marketing to keep up the superiority of seed potato produced by this territory for the general welfare of the community. Further, the means of transport and communicational facilities must be accorded top priority. The rail traffic from Simla to Kalka must be increased to avoid rush at the booking stations and to affect timely supply to the growers at the other end.

So far procurement is concerned, the Primary Village Co-operative Societies should collect the village produce and trans-

port it to the nearest market. The seed should be properly graded and kept variety-wise. Much of time and money will be saved if the growers are persuaded to grow the crop varietywise and seperate the harvest into grades. The seed put at the market by village co-operatives should be properly weighed, bagged securely bearing the seal of the society and grade specification on each bag. The Agmark specification as laid down by the Marketing Adviser to the Government of India in no case should be voilated. The defaulters at any stage should adequately be punished with fine or imprisonment depending upon the nature of crime. The severe legislative activities may help to maintain the traditional fame of this ragion to produce and supply diseasefree seed potato as demanded by the plaingrowers.

Land Ceilings In Rajasthan

By : Dr. Dool Singh

THE twin objectives of all land reforms, as stated by the Planning Commission, are : (a) to remove such impediments upon agricultural production as arise from the character of the agrarian structure, and (b) to create conditions for evolving an agrarian economy with high levels of efficiency and productivity. Imposition of ceilings on agricultural land-holdings is regarded as one of the most important constituents of modern land reforms. The principle that there should be an absolute limit to the amount of land which an individual may hold has been accepted by the party in power and is being pursued with varying degrees of vigour and enthusitsm in the various states. As all the states were required to pass ceilings laws by the end of 1959, the Rajasthan State has also enacted the Rajasthan Tenancy (Amendment) Act, 1960 only very recently for fixing ceilings on agricultural land-holdings in the State. In this article it is proposed to examine criticaly the need and the suitability of this measure for achieving the much avowed objectives of land reforms.

Ceiling Area :

The ceiling area for a family of five or less than five members has been fixed at 30 standard acres of land and where the members of a family exceed five, the ceiling area will be increased for each additional member at a 5 acres subject to an over-all ceiling of 60 standard acres of land. For this purpose, a standard acre has been defined as the area of land which, with reference to its productive capacity, situation, soil classification and other prescribed particulars is likely to yield ten maunds of wheat yearly and, in case of land not capable of producing wheat, the other likely produce will, for the pupose of calculating a standard acre be determined so as to be equivalent in terms of money value to ten maunds of wheat.

A close scrutiny of the provisions regarding ceiling area reveals that there would be no absolute uniform ceiling on land in Rajasthan and that it would be varying not only from tehsil to tehsil but also from village to village or even from field to field. The interpretation and the actual application of the term "standard acre" are bound to have a good deal of ambiguity and consequent confusion in the mind of the executive. As reliable data

regarding crop yields and prices are not available, the determination of a standard acre, in most of the places, will be too difficult a task. Moreover, looking to the climatic and other conditions prevailing in Rajasthan, the ceiling of 30 standard acres is too low. It is based on the assumption that a family of five members should have a gross yield worth about Rs. 3,600 in a year; but if we take the cost of cultivation at about 50 per cent, the net income is reduced to a paltry sum of Rs. 1,800 which works out to a very low income of Rs. 360 per head. As the policy of fixing a limit on incomes in the rest of the economy has not been accepted so far, the beginning made with such a low income in the agricultural sector is nothing short of a great social injustice. It is fraught with serious dangers which might result in social upheaval in the rural sector.

Not only this, if we have a glance at the exemptions that are provided in section 30[1] of the amended Act, even the so-called purpose of fixing the ceiling seems to have been defeated. Thus, groves constituting contiguous and compact areas, sugar cane farms, efficiently managed cooperative farms, specialised farms and other compact farms whose break up is likely to lead to a fall in production are exempted from the application of ceilings. Besides, the State Government has also reserved to itself the power of interpretation and grant of more exemptions for particular classes of persons or holdings. Hence most of the larger farms will be exempted from the ceilings on one ground or the other. As a result, the claim of the Revenue Minister of Rajasthan, "that there is urgent and pressing need for the imposition of ceilings on holdings of agricultural lands in Rajasthan so that land may be available for distribution among landless tenants and tenants of uneconomic holdings," would only be a cry in the wilderness.

Let us examine this issue in a more objective and concrete manner. According to the report of the Land Ceilings Committee of Rajasthan, the total number of holdings of 60 acres and above was about 67 thousand with an area of 82,88,045 acres. Having regard to the poor soils, deficient rainfall, size of the families of the land-holders and other factors that have to be weighed in determining the ceiling area and the liberal exemptions that are contemplated by the State Government, the surplus released by the operation of the ceilings provisions is not likely to be substantial and can be roughly estimated at about 5 lakh standard acres. On the other hand, the number of families of landless labourers is estimated at about 2,50,000[2] while the number of holdings below 10 acres, which may safely be regarded as uneconomic, was about 18 lakhs[3]. Thus, for a small surplus of about five lakhs there would be an army of more than twenty lakh claimants. Hence, by any stretch of calculation the surplus land would not be adequate enough either to satisfy the land hunger or the landless or to solve the question of uneconomic holdings. As a matter of fact, the introduction of the ceilings law has complicated and intensified the already complex problem of land holdings instead of solving it. In the words of Acharya Vinoba Bhave, "Government's land reforms policy has failed to give effective relief to the common man. Land reforms,

1. Vide Foreword of the Report of the Committee for fixation of Ceilings on Agricultural Holdings (1958), P. 2.

2. Vide Report of the Rajasthan Ceilings Committee (1958) P. 2.

3. Ibid., P. 48.

like the ceiling on land, have not helped the people but on the contrary clever landlords have harmed the cultivators by distributing their land among their "kith and kin".[4]

Allotment of surplus

According to the policy directives of the Congress, the surplus land resulting from the operation of ceilings must be entrusted to the existing village panchayats or the village co-operatives formed for the purpose, but the relevant provision in the Act under study is in a striking contrast to this. The surplus available will be let out to landless and other persons in accordance with the rules made in this behalf by the State Government. However, the phrase "and other persons" is rather objectionable as it would misuse the powers thus acquired. It is quite evident from the explanation by Mr. Damodar Lal Vyas, Revenue Minister of the State in the legislative assembly during the course of the debate on this clause when he said, "the land has also to be allotted to *political sufferers,* ex-army men, *gaushalas,* agricultural colleges under certain other legislation and it is, therefore necesasry to retain this phrase". Thus, not only will there be a good deal of favouritism and misuse of the blanket power reserved by the State for allotment of surplus to the individuals but it will also result in a considerable fall in the agricultural production. The new allottees such as the landless labourers would not be able to use the land efficiently as they iack in capital, eqipment and technical know-how, Consequently the production will suffer a serious setback due to the break up of large farms, specially those the owners of which do not tow the party line. Thus, the policy of allotment of surplus lands would defeat the very purpose of imposing ceilings, namely, the raising of levels of efficiency and productivity of agrarian economy.

Problem of Compensation

The State Government shall be liable to pay compensation for all lands vesting in it to the persons who surrender the same. The amount of compensation will be thirty and twenty-five times the sanctioned rent-rate respectively for the first and second slices of 25 acres each over the ceiling area; the compensation for the remaining surplus would be calculated at twenty times the sanctioned rent-rate. Thus, the acquisition of surplus land would constitute a serious strain on the resources of the State. Looking to the conditions obtaining in this part of the country, the scale of compensation is undoubtedly pitched too high. On the other hand, it seems the State would not be able to recover a substantial portion of the compensation so paid from the new allottees and beneficiaries.

In fine, it may be stated that the ceilings law in Rajasthan is not likely to serve any useful purpose. Instead of achieving any of the basic objectives of land reforms. it would create a host of new problems for the State. As a matter of fact, it seems, it would remain a redundant piece of legislation for quite a long time. The objectives of securing social justice and increasing the agricultural production would have been served better by promulgation of an elaborate land mangement legislation than the haphazard scheme of the ceilings. This would constitute a realistic approch to the problem of land ceilings in Rajasthan State.

4. Vide Hindstan Times dated 30-3-1960.

A Study Of Land–Holdings In The District Of Aligarh

By : S. S. Gupta,

THE present food crisis has forced the people and the Government to rethink about the agriculture and its complex problems and try to find out some speedy and permanent solution for improving the condition of agriculture and its dependents. In such re-thinking the problem of land-holdings is obviously to figure in prominently. So, I undertook a Survey of elevan villages of the district of Aligarh and tried to find out for myself the size of land-holdings and the extent of fragmentation. The survey convinced me that it is not possible for any outside surveyor to form a correct idea about land-holdings for himself because an outsider is looked upon by villagers with suspicious eyes and they take him as a person not interested in their welfare and capable of bringing some unforeseen harm. For example, most of the villagers enquired whether I would reveal all the information to the Government and get their land taken away. Even the help of *Lekhpals* and Deputy Collectors, who are most respected personalities of the villages, was of no good. On the other hand, it complicated the matters as the suspician was converted into conviction. Under the circumstances, the Government records—*Khatoni* and village maps, can be the only guide for forming an idea about the size of land-holdings and the extent of fragmentation.

Size Of Holdings :

With the help of Government records *Khatoni* and maps–the following table can be prepared which is supposed to give the size of the land holdings :

TABLE NO. I.

(Size of Holding)

Villages	Total land Bigha-Biswa-Biswansi	No. of Khatas	No. of land owners	No. of land-owners residing in other village.
1. Balipur (Atrauli)	518- 0-14	55	100	36
2. Gindoli	238- 1-16	15	22	...
3. Hajipur F. K.	631- 4- 8	62	106	8
4. Habibpur	556-11-16	50	155	31
5. Jamalgarhi	439- 2- 9	108	205	81
6. Kheria T. L	368-16- 8	60	86	51
7. Mahera	329- 4-16	40	84	39
8. Northa	735- 8-12	104	210	60
9. Nagar	868-18- 0	99	182	124
10. Rafipur Sia	342-13- 0	44	85	2
11. Shiampur	403-14- 0	32	50	7
Total	5,431-15-19	669	1285	439

The above table reveals that the size of land-holdings, if every khata is taken to be of one man, which probably the Government supposes to be one, is 8 Bigha 2 Biswas 7.7 Biswansi. However, if every khata is splitted up into a number of land-owners whose names appear in this Khata, the size of holding is 4 Bigha 4 Biswa 10.9 Biswansi. But when the number of land-owners residing in other villages are not taken into account, then the size comes to be 6 Bigha 8 Biswa and 8.2 Biswansi, All these facts forced me to conclude that the Government records are not very despendable and on the basis of these records it is not posible to form a correct idea about the size of landholdings. The following inaccuracies can be cited in the support of this contention :

Firstly, the Khatas of Lekhpals are not up-to-date and show even those persons who are dead as land-owners.[1]

Secondly, many persons who have migrated to cities or to other villages and as such are incapable to till the land themselves, have been shown as landowners.[2]

Thirdly, the names of several minors, widows, wives etc. appear as independent land-oweners while in fact due to age. or custom or sex they are unable to cultivate the land themselves.[3]

Fourthly, persons appear in the *Lekhpals Khatas* as land owners, in different names [4]

Fifthly, Khatas show even those pieces of land which have either been eaten away by a river or taken over by village panchayats as the lands of different persons. Obviously, either such a man does not exist or has become a land-less labourer.[5]

Sixthly, several plots of land which are shown under orchards or jungles in Govern-

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1. For example, in village Hajipur, one Jodha Singh, son of Karan Singh, died long ago but fact has not been mentioned and his name still appears in the list of land-owners. And this is not the solitary case. There are several such cases which are to be found in every village.
2. For example, in village Jamalgarhi 81 persons, whose names appear as land-owners, reside in different villages - 7 in Atrauli, 42 in Chomuha, 9 in Chindauli, 11 in Mosnabad, 12 in Debai, 1 in Ishanpur 1 in Aligarh and 1 in Kheda (District Badaun) Similarly, in village Hajipur, 8 land-owners were found living in other villages 4 in Gokhara and 4 in Habetpur. The reasons for several land-owners residing in other villages are : (a) These villagers or their fathers migrated to their present homes after their marriage because either their in-laws wanted them to live there and this was one of the conditions of marriage, or they were given some land in the village which they started cultivating themselves after having differences with their parents or because the new land was better and/or more than the land which they inherited from their parents; (b) These land-owners belong to ex-zamindar families and owned land in different villages before abolition of Zamindari· Naturally, at the time of abolition of Zamindari, they tried to retain the best lands in every village. As a result of this policy they now own lands in more than one village but live in that village where they have the largest tract of land and the best facilities to cultivate it.

   Normally, these absentee land-lords are unable to cultivate the lands of those villages where they do not reside. So their lands are given on *Batai* but as a measure of precaution, the land is given only to those persons who are either relatives or trusted ones. Besides, the educated and clever out of them cook false docments which show that the partner is a servant of the land-owner.

   For example, receipts of pay are taken every month Again as a measure of precaution partners are changed every year. *Lekhpals* and other Government Officers are somehow got round and so they do not enter the names of their partners as the real cultivators.
3. For example, in Jamalgarhi, Ali Navi, Wali Mohd, and Om Prakash all minors have been shown, vide Khata Nos. 38, 50 and 66, respectively, as land owners. Again, in the same village Khatoon Fatma, Afsari begam, Sugra Begam, Dhanwanti and many more ladies have been shown vide Khata Nos. 6A, 25, 25, 27 etc. as land-owners while they are not themselves cultivating the land or getting it cultivated under their own supervision And this is not the only speciality of the village Jamalgarhi. The same pattern is visible in all the villages. For example, in village Hajipur, Kalawati, Leelawati, Phokha, Punia and many more ladies are shown as land-owners.
4. For example, in the village Hajipur, widow Leelawati appears as land-owner vide Khata No 19 & 54and the same lady appears as widow Kalawati in Khata No. 33
5. For example, in village Girdharpur, lands of quite a large number of farmers have been eaten away by river Jamuna as the river has changed its course; but still the lands of these people stand in the names of the previous landowner.

ment records, maps, etc. are in fact under cultivation.[6] Similarly, on several plots, which are shown under cultivation, orchards are standing at present.

Extent of Fragementation

Efforts were also made to find out the actual extent of fragementation of land-holdings as it affects the yields, cost of production, demand for labour and schemes of future improvements in agriculture. But unfortunately, no conclusion could be derived with the help of Government records because of the following reasons :-

Firstly, *Lekhpal Khatas* mention the names of owners of different plots of lands but they do not record any-where their relationship of share in these plots of lands.[7]

Secondly, it was noticed that generally, a group of persons jointly own a plot of land and a few out of them, independently, or in joint ownership with other persons, also own some other plots.[8] But nowhere proper records are kept to show their shares and ownerships of different lands.

Under the circumstances, it was not possible to calculate the individual land-ownership and trace out on the village map the plots of land which one owns. So, the correct idea of fragementation of land holdings could not be made with the help of Government records.

Efforts were also made to find out the extent of fragmentation of land holdings on the basis of personal survey. Here also, unfortunately, much success could not be achieved due to the under - mentioned reasons :-

Firstly, most of the land-owners, due to the illiteracy, do not even remember the number of plots and their areas which they jointly or independently own.

Secondly, land-owners also do not remember their individual shares in the different plots which they own with others.

Thirdly, the land -- holdings are generally not devided among the joint owners on the basis of area but due considerations are made of situation, fertility, boundaries, irrigation facilities etc. Hence, if at all land is officailly divided, it is divided on the basis of the value of the land and not its area. As such, even after finding out the shares of individual joint owners of the land, it would not have been possible to calculate the extent of fragmentation till a very thorough and scientific study of land was made. And, obviously, it is not possible for a single man, having very little backkground of such technical study, to arrive at any conclusion in this direction.

Fourthly, in practice, villagers culti-

6. For example, in village Hajipur, plot No 56,65 and 66 are shown under orchard while there is not even a tree to be seen on these plots.

7. For example, in village Jamalgarhi plot nos. 188J and 301J, whose area is 31-10 are jointly owned by 16 individuals, viz., Mushatak Ali, Chiranji Lal, Udhal singh, Kharg Singh, Mahendra Singh, Dhal Singh, Mohar Singh Vikram Singh, Ram Singh, Widow Dhanvanti, Akbar Ali, Ashtiak Ali, Mohd Hassan, Mohd Hussain, Hamid Hassan and Vakf Ali. The very names indicate that all of them cannot be blood relations. But neither Lekhpal knows nor Government records reveal the individual share in plots 188J and 301J. Similarly, in village Refipur Sia 30 persons jointly own land but nowhere their individual share has been shown.

8. For example, in the above cited case, plot nos. 188J and 301J were owned by 16 persons. out of them, Mushtak Ali appears as a jont owner of plot nos. 210 and 188C with Afsari Begam and widow Bashir Ahmad, both of them not appearing as jont owners in plot nos. 188J and 301J.

Again, Mushtak Ali, Ishtiak Ali, Mohd Hassain, 3 out of 16 Co. owner of plots nos. 188 J and 301 J in village Jamalgarhi appear are joint owners of plot nos. 98 and 188N with four new persons, viz. Khatoon Fatma, Altaf Fatma, Bitool Fatma, and Manzoor Fatma. And nowhere it is recorded as to what their individual share in the plot nos. 188J 301J, 188 C, 210, 98 and 188 N is.

vate lands independently but still are not prepared to admit easily as they are morally afraid of legal consequences and their land being snatched away.

Fifthly, even those farmers who accept that they are cultivating the land independently, do not remember its area, either due to their illiteracy or due to the fact that the decision to divide the land was taken generations back by their fore-farthers and officially no such changes were made.

Sixthly, the lands cultivated by individual farmers do not correspond to the plots made by the Government some 21 years back and which still continue in the Government records. This is because of the private divisions of the lands and the habit of farmers to illegally go on extending the boundaries of their fields.

Under the circumstances, it was surprising to find out the table of percent of holdings by size groups in different zones given by the Agricultural Labour Enquiry Report which is as follows :-

TABLE 2

(Percentage Of Holdings By Size Group)

Size-group	Eastern	Central	Western	Hill	Terai	Southern	whole of U.P.
Under 1 acre	23.2	12 6	8.5	20.0	5.0	14 8	14 8
1-2 5	29,5	26.2	23.1	26.5	18.4	26 1	26.2
2.5-5	22,7	25.0	26.5	28.7	30 8	25.1	25.1
5-10	15.3	23.4	25.0	16 3	23.1	20.6	20.6
Above10	9.3	12.8	16.9	8.5	22.7	13.4	13.3
Total	100.0	100.0	100.0	100 0	100 0	100 0	100.0

Probably, the figures given in the above table indicate the land owned not by individual land owners but by the groups who jointly own a certain piece of land.

In the end it can be concluded that no agricultural planning, based on the existing records of land-holdings, will succeed as the whole data appears to be inaccurate. It is, therefore, suggested that before embarking on various schemes such as consolidation of land-holdings, fixing of ceiling, cooperative farming etc. the Government records should be made accurate. And this is possible only when experts and honest people are entrusted with this mighty work.

Seventhly, it was found that farmers have a weakness to illegally go on extending the boundaries of their fields if they happen to be adjecent to panchayat lands, ex-zamindary lands, (which are not cultivated at present), orchardlands, etc. etc.

Eighthly, even at present it is a custom among many families that after the death of father, the names of heirs will not be incorporated in Government records, till the grand-father is alive. In such cases, either no charge in Government records is made or the grand-father will appear as land-owner and not the heirs of the deceased. However, now this custom is fast dying out,

Basic Balanced Fertiliser For Increased production

By: A. K. B. Cazi

Fertiliser Mixture and its Use

THE principle constituents of a fertiliser mixture are nitrogen (N), phosphoric acid (P_2O_5) and potash (K_2O). Those that contain all the three constituents are called *complete mixtures.* Some fertiliser mixtures contain only two of the fertilising ingredients and are called *incomplete mixtures.*

In our country, the practice of applying chemical fertilisers is of recent origin and the use of these in mixed form is of still more recent–introduction.

Fertiliser Formulae advocated

In our country too large a number of different grades of fertiliser mixtures are being advocated and put up in the market for sale. In most of these grades there is preponderance of nitrogen, the other two ingredients being in smaller proportions. In agriculturally advanced countries it is the phosphoric acid which preponderates over the other two. In U. S. A. for example, where the fertiliser mixtures are being used as an established practice since as long back as 1880, the average trend of percentage of primary nutrients corresponded approximatly to the formula (4–9–5), that is 4% nitrogen 9% phosphoric acid and 5% potash as could be seen from the table I given below :-

TABLE I

Variation in the plant-food content of complete Fertiliser mixtures
(Source: Ross W. H. and Mehring A. L.)

Year	N	P_2O_5	K_2O	Total	Year	N	P_2O_5	K_2O	Total
	%	%	%	%		%	%	%	%
1880	2.3	8.9	2.2	13.4	1929	3.1	9.8	4.6	17.5
1890	2.3	9.2	2.4	13.9	1930	3.2	9.7	4.9	17.8
1900	2.0	9.2	2.9	14.1	1931	3.3	9.6	5.0	17.9
1910	2.2	9.0	3.7	14.9	1932	3.4	9.5	5.1	18.0
1920	2.2	8.9	2.8	13.9	1933	3.5	9.3	5.2	18.0
1925	2.6	9.3	4.1	16.0	1934	3.6	9.2	5.3	18.1
1926	2.7	9.5	4.3	16.5	1935	3.6	9.1	5.4	18.3
1927	2.8	9,4	4.4	16.6	1936	3.8	9.3	5.5	18.6
1928	2.9	9.6	4.5	17.0					

If the fertilising ingredients in the formula (4–9–5) are converted into element form and expressed as nitrogen, phosphorus and potassium it would be noticed that the percentages of each of these elements would be about the same, viz 4% This formula (4–9–5) which has been evolved by long experience since 1880 and in which the elements NPK are in equal proportions can well be adopted as basic formula. Other formulae which may be advocated to suit the requirements of different major groups of soils and crops may be more or less modified forms centering around this basic formula. Table II given below shows how the principal fertiliser grades applied in various States of America to five of the most fertilised crops consuming 75 per cent of the total fertiliser tonnage in the States vary from this formula viz : (4–9–5).

TABLE-II

Most commonly used grades for principal fertilised crops in States consuming 75 per cent of the total fertiliser tonnage.

(Source : Ross W. H. and Mehring A. L.)

STATE	Cotton	Corn	Potatoes	Wheat	Tobacco
	Grade	Grade	Grade	Grade	Grade
Alabama	6-8- 4	3-8- 4	4-10-7	—	—
Florida	3-8- 5	4-8- 4	4-8- 8	—	3-8- 5
Georgia	4-8- 4	3-9- 3	—	2-10-4	3-8- 5
Indiana	—	2-12-6	0-10-10	2-12-6	2-12-6
Maryland	—	2-12-4	6-6- 5	2-8- 5	4-8- 12
Mississippi	4-8- 4	4-8- 4	6-10-7	—	—
North Carolina	3-8- 5	3-8- 3	6-6- 5	3-8- 3	3-8- 5
New York	—	4-12-4	4-8- 7	2-8- 10	—
Ohio	—	2-12-6	4-8- 8	2-12-6	4-10-6
Pennsylvania	—	2-8- 5	2-8- 10	3-12-6	4- 8-7
South Carolina	3-8- 3	3-8- 3	6-6- 5	3-8- 3	3-8- 5
Virginia	0-10-4	3-8- 3	6-6- 5	0-16-0	3-10-6
Louisiana	4-8- 4	—	4-12-4	—	—
Main	—	3-10-6	4-8-10	—	—

From the above table it is clear that whatever adjustments are made the P_2O_5 does not seem to be affected and holds its predominent position in all the grades.

As pointed out by Norland M. A. Soil Socientist, Agricultural Reasearce Service, U. S. A. Department of Agriculture. in most recent years as per statistical data of 1958, the total consumption of commercial mixture amounted to 14,353,023 tons of which 9.8 per cent were two element (N. P., P. K. & N. K.) mixtures. The rest 90.2 p. c. were complete N. P. K. mixture.[5] The recent tendency is to adopt higher analysis fertiliser mixtures. The 5-10-10 nd 4-12-12 fertiliser mixtures consumed the largest tonnage for Individual grades, which followed closely the national weighted average of the primary nutrients contained in the mixtures of 5.9 p. c. N., 12.53 p.c. P_2O_5, and 11.73 p. c. K_2O. In fact 1:2:2 N. P. K. ratio appears to be followed by a ratio 1:3:3. For us in India where the soils are more widely dificient in P_2O_5 and less so in K_2O, the most suitable basic ratio would be approximately 1:2:1.

How grades are fixed

In many States of America the grades are fixed at the conferences held between the State agricultural officials and the fertiliser manufactures doing buslness in those States. The adopted grades are limited in number and the use of only these grades is enforced. Experience has taught that too many grades cause too much confusion and confound the agriculturists. The cultivators become well familiar with the different kinds of fertiliser mixtures and decide more readily on the proper kind to use if the number of grades are not too many.

Reasons for the discrepancy between our grades and grades in Agriculturally advanced countries–

In U.S.A. where the majority of grades are centred around the formula (4–9–5) there too are as many variations in soil and crops as we have in our country. Why should there be such a wide difference in the fertiliser mixture grades in this country as compared with those in U.S.A.? The following seems to be the logical explanation:

Our experience of using chemical fertilisers is, in the first place meagre. When the start in the use of fertilisers was made it was confined mostly to nitrogenous fertilisers which as expected, gave specular response. This created deep impressions on our mind in favour of nitrogen and our

agriculturists became nitrogen minded exclusively. Secondly our experiments and trials on fertilisers have been confined to the short range duration of one or two seasons only, on which the conclusions were based. Thirdly in our target of consumption of fertilisers based as they are mostly on the internal production capacities, nitrogen predominates much more prominently in the ratio of NPK. For example today in 1960-61 fertiliser consumption targets are 5,00,000 tons N; 1,50,000 tons P_2O_5 and 45,000 tons K_2O, giving an approximate ratio of 10:3:1 of NPK. No doubt, it has well been realised that this is grossly an unbalanced ratio. However, this is a passing phase and in the future planning NPK ratio is targeted to be improved year by year obviously taking into consideration the resources of production. According to third five year plan, the consumption of NPK in 1965-66 is targeted to achieve the level of 1,000,000 tons N, 500,000 tons P_2O_5 and 200,000 tons K_2O giving an NPK ratio 10:5:2.

What our experiments and experience have taught us ?

We have now realised that response of crops to nitrogen becomes less and less if its application is continued season after season on the same soil, and more often than not, the crop yields actually begin to depress. We are now in a position to ascribe this behaviour of nitrogen to the fact that nitrogen while contributing towards the increase in crop yields simultaneously increases the uptake of phosphoric acid and potash from the soil thus causing depletion in the soil of its available reserves of the latter fertilisers. Consequently phosphoric acid and potash sooner or later begin to operate as limiting factors in crop production. Accordingly we have started to improve our method of application of fertilisers which hitherto had confined mostly to the use of nitrogen by now linking it with P_2O_5 in most cases and also K_2O in some cases. Never-the-less, nitrogen still continues to hold its preponderent position in our modified grades. It is well known that nitrogen can also be obtained directly from the atmosphere overlying the fields if specific types of bacteria inhabiting the soils are stimulated in their nitrogen fixing activities. If, however, large quantities of available nitrogen be applied to soils the fixation of atmospheric nitrogen would be depressed since these bacteria would prefer to utilise this source of readily available nitrogen for their growth to atmospheric nitrogen as is their natural tendency, with the result that the total nitrogen status of the soil tends to remain more or less adjusted to a certain level inspite of application of larger doses of nitrogenous fertilisers. But if higher level of calcium and phosphorus are maintained by application of superphosphate which stimulates the activities of nitrogen fixing bacteria and at the same time sufficient amount of decayed organic matter is provided as their energy food, their activities in connection with fixation of atmospheric nitrogen will be increased raising thereby the nitrogen status of the soil to a higher level. In fact there is more or less fixed relation between the contents of available minerals like phosphorus, potash and calcium and nitrogen status of the soil.

Conclusions

From the foregoing data and discussion the following conclusions can be drawn:

(1) It will be advisable and economical to aim ultimately at the adoption of the grade (4-9-5) as our basic or pivotal formula fertiliser mixture which contains elements NPK in equal proportion economical because nitrogen is the costliest fertilising ingredient per unit value. Other grades that will be fixed should center around this basic formuia.

(2) Fertiliser mixture grades should be restricated to a limited number only. Adoption of too many formulae of fertiliser mixtures creates confusion and the cultivator who has to select what grade of mixture would be suitable in his case will not be in a comfortable position to decide for himself.

(3) In order to increase the level of easily available soil nitrogen through fixation of atmospheric nitrogen it is necessary to apply adequate quantity of decayed organic manure or compost reinforced with superphosphate which contains both calcium and phosphoric acid in available forms. In this way we can raise the fertility as well as productivity level of our soils at low costs.

Cooperative Farming In India

(Contd. from page 288)

Thus the members of the society shall be able to keep the milch-cattle as each shall have spare time and money to maintain such cattle which will improve his dietary as well as his strength and capacity of work to be done at the farm and also to do some other occupation outside the farm.

(5) Working expenses of the farm :

The society will require some money to meet its expenses for various operations on the farm as well as for improvements to be effective on the form and to provide with loans to members for better bulls and milch animals. The needs of the working expenses will vary from farm to farm depending on the area of the farm and the fertility of the land. If the land is newly reclaimed, huge amount of money shall be needed.

This amount of working expense can be raised partly through the issue of cash shares and partly by the borrowings at reasonable rates of interest. In the initial stages sufficient funds cannot be procured by the issue of each shares but the society may resort to borrowings.

(6) Crop planning for the pooled land:

The planning of the crop in the case of a co-operative society on the pooled land may not be the same as the crop-planning on a small holding of an individual cultivator. The area of the small cultivator being small, he shall draw a different scheme of crop planning, while the area of a cooperative farm being large, the planning shall be on some different footing. In drawing out the scheme of the crop-planning the members of the society will do good if they seek the advice of an agricultural expert. The expert will advice them according to the existing irrigational facilities and manurial resources available to the farm. In short he should see to all the facilities and limitations under which the farm is being worked out. He should see that the crop planning is of such a nature as to utilise all the facilities available there to the best advantage for production. He should advise them in such a way as to obtain the best results in the existing working conditions of the farm. The plan will, of course, have to include other land improvements such as irrigation and manure facilities as well as Bunding. The supply of these facilities and their extent will depend upon the departmental programmes. Within these programmes the needs of the cooperative farming society will be given priority over the needs of the individual cultivators elsewhere.

In chalking out such a plan the expert will not ignore the necessity of fodder for the cattle. At the most 2/3 of the farm area should be alloted to the growing of food crops such as wheat, gram, barley and other Kharif crops, while 1/3 of the area should be alloted for the growing of fodder for the draft and milch cattle.

(7) The fixation of labour remuneration for the operations on the Cooperative Farm: The wages shall be fixed according to the prevailing rates in the locality. The wages may be fixed at a lower rate or at a higher rate. If they are fixed at a lower rate it will mean a larger surplus in the land shares while if the reverse is the case there shall be small surplus to the land shares. In my opinion the lower wage rate shall be beneficial for the economic betterment of the members, who are heavily indebted to the village mahajan. The assets from which individual debts can be realised become Indebted. The society, of course, will not ignore the steps for scaling down and liquidation of existing debts of the members and to see that in future no such loans are obtained by the members from Mahajan.

(8) **Formation of work Committees and distibution of work :** The society will have to form work committees of its members to be incharge of different works and for distribution of work among its members. The system of distribution of work will depend upon the local conditions varying from locality to locality. There might be some such cultivators who do not want to work themselves on the farm and depend upon the hired labour for their cultivation. They will find the system somewhat irk-some. In order to remove such difficulties the society has to take the question of wage rate into consideration under the circumstances of its members and the conflicting interests of the land investors and the wage earners.

The society has to face some problems of a minor nature; the decision of such problems shall be arrived at according to the local conditions of the society. These problems may include the following :-

(a) The basis on which the compost prepared by individuals will be purchased by the society;

(b) the basis on which the fodder will be supplied by the society to the members for their cattle;

(c) The basis on which the food grains are to be supplied by the society to meet the needs of its members. These and some other minor problems of the nature are to be decided by the work committees formed from amongst the members of the society.

(9) **Mechanisation of the farm :-**

It is not at all necessary that mechanisation of cultivation should be a normal feature of a Cooperative Farming Society. Mechanical cultivation can be introduced where there is insufficient number of men and bullock power otherwise not. Moreover, "agricultural machinery cannot be used for more than a limited period of the year. In many parts of Europe farm machinery is much less used than in the United States, as labour is comparatively cheaper in Europe,. This is even more so in a country like India, where labour is so cheap that it does not usually pay to employ expensive kinds of agricultural machinery."* Here in India the problem is not of labour scarcity but the problem of work for them. However, the society will do well to maintain simple machines like threshers, for agricultural operations which have to be conducted for a limited time to avoid risk of weather conditions and cope with the difficulty of labour scarcity at the time of harvesting, when the work at all fields is to be done in order to save loss of grain in the field.

(10) **Disposal of the surplus produce by the society :-**

In order to recover its working expenses and distribution of profits, the society will have to market its surplus produce. Out of this surplus, the society will keep a a reserve of pure seed of good quality for its own farm as well as to sell it and earn profit out of this bargain.

(11) **Disposal Of The Gross Income Of The Farm :**

Finally, there is the question of the disposal of the gross income of the farm. Out of this gross profit the working expenses of the farm are to be deducted. This will give the society the Net Income of the farm the whole of which will not be distributed amongst its members. 25 per cent of this net Income shall be transferred to strengthen the Reserve Fund, and the financial position of the society shall be improved. In addition to this fund there should be some other cuts also for cattle and crop insurance and for the improvements and farm buildings etc. And the balance is to be distributed as dividend on cash and land shares and as bonus to those who have done labour.

Thus there is enough of scope for the organisation of co-operative farming societies in the country. "Cooperation is the only instrument which has enabled the small farmers to to come into line with modern methods. Small farmers, by forming cooperative associations may combine the economics of production on a large scale with many of the joys and social gains of small proprietors."*

Now with the attainment of freedom, we should be more optimistic and should wait for the time when the country would be made selfsufficient in the matter of food. Conditions in the country are such as to make it self-sufficient.

* V. G. RamKrishna Ayyar, Small State Production in India. PP. 45, 46,
* Marshall- Principles of Economics-P. 655.

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